

Proposal of correction of expressions for calculation of K_d as indicated in Annex B of ISO 9806:2017

It was found that there is an error in the ISO9806:2017 Annex B, which has some impact on the calculation of K_d . Considering the references [1,2,3] the following correction is proposed:

Instead of:

$$K_d = \frac{1}{W} \sum_{\theta, \gamma=0^\circ}^{90^\circ} K_b(\theta, \gamma) \sin \theta \cos \gamma$$

and

$$W = \sum_{\theta, \gamma=0^\circ}^{90^\circ} \sin \theta \cos \gamma$$

should be:

$$K_d = \frac{1}{W} \sum_{\theta=0^\circ}^{90^\circ} K_b(\theta) \sin \theta \cos \theta$$

and

$$W = \sum_{\theta=0^\circ}^{90^\circ} \sin \theta \cos \theta$$

Proposal for resolution to amend the SKN Scheme Rules:

- i) Include this correction in the Annex P3 of the Solar Keymark Scheme Rules
- ii) Add the attached excel sheet (Annex P5.6 Calculation K_d ISO 9806 Annex B - version 1.0 (27092019).xlsx) as Annex P5.6 to the Solar Keymark Scheme Rules, so that all laboratories use the same tool.

References:

- [1] Brandemuehl, M. J. and Beckman, W. A. (1980). Transmission of diffuse radiation through CPC and flat plate collector glazings. Solar Energy 24(5): 511-513.
- [2] Carvalho, M. J., Horta, P., et al. (2007). Incidence angle modifiers: A general approach for energy calculations. ISES Solar World Congress.
- [3] Stefan Hessa and Victor I. Hanbyb (2014). Collector simulation model with dynamic incidence angle modifier for anisotropic diffuse irradiance. SHC 2013, International Conference on Solar Heating and Cooling for Buildings and Industry, September 23-25, 2013, Freiburg, Germany, Energy Procedia 48 (2014) 87 – 96. doi: 10.1016/j.egypro.2014.02.011

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